



BioMap and Living Waters

Guiding Land Conservation for Biodiversity in Massachusetts

Core Habitats of Kingston

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is not intended for use in state regulations.

Produced by:
Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries and Wildlife
Executive Office of Environmental Affairs
Commonwealth of Massachusetts

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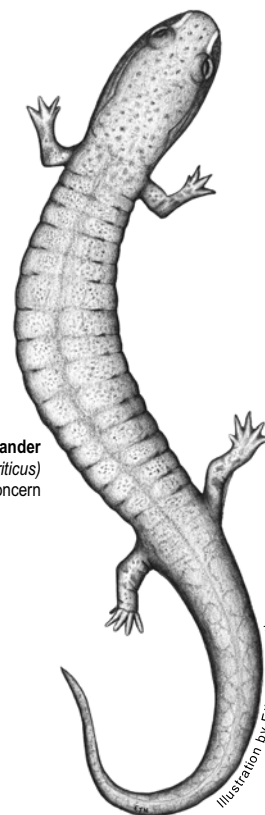
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Living Waters: Core Habitat Summaries

* Depending on the location of Core Habitats, your city or town may not have all of these sections.

Spring Salamander
(*Gyrinophilus porphyriticus*)
Species of Special Concern



Funding for this project was made available by the Executive Office of Environmental Affairs, contributions to the Natural Heritage & Endangered Species Fund, and through the State Wildlife Grants Program of the US Fish & Wildlife Service.



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Introduction

In this report, the Natural Heritage & Endangered Species Program provides you with site-specific biodiversity information for your area. Protecting our biodiversity today will help ensure the full variety of species and natural communities that comprise our native flora and fauna will persist for generations to come.

The information in this report is the result of two statewide biodiversity conservation planning projects, **BioMap** and **Living Waters**. The goal of the BioMap project, completed in 2001, was to identify and delineate the most important areas for the long-term viability of terrestrial, wetland, and estuarine elements of biodiversity in Massachusetts. The goal of the Living Waters project, completed in 2003, was to identify and delineate the rivers, streams, lakes, and ponds that are important for freshwater biodiversity in the Commonwealth. These two conservation plans are based on documented observations of rare species, natural communities, and exemplary habitats.

What is a Core Habitat?

Both BioMap and Living Waters delineate **Core Habitats** that identify the most critical sites for biodiversity conservation across the state. Core Habitats represent habitat for the state's most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. Core Habitats represent a wide diversity of rare species and natural communities (see Table 1), and these areas are also thought to contain virtually all of the other described species in Massachusetts. Statewide, BioMap Core Habitats encompass 1,380,000 acres of uplands and wetlands, and Living Waters identifies 429 Core Habitats in rivers, streams, lakes, and ponds.



Core Habitats and Land Conservation

One of the most effective ways to protect biodiversity for future generations is to protect Core Habitats from adverse human impacts through land conservation. For Living Waters Core Habitats, protection efforts should focus on the **riparian areas**, the areas of land adjacent to water bodies. A naturally vegetated buffer that extends 330 feet (100 meters) from the water's edge helps to maintain cooler water temperature and to maintain the nutrients, energy, and natural flow of water needed by freshwater species.

In Support of Core Habitats

To further ensure the protection of Core Habitats and Massachusetts' biodiversity in the long-term, the BioMap and Living Waters projects identify two additional areas that help support Core Habitats.

In BioMap, areas shown as **Supporting Natural Landscape** provide buffers around the Core Habitats, connectivity between Core Habitats, sufficient space for ecosystems to function, and contiguous undeveloped habitat for common species. Supporting Natural Landscape was



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generated using a Geographic Information Systems (GIS) model, and its exact boundaries are less important than the general areas that it identifies. Supporting Natural Landscape represents potential land protection priorities once Core Habitat protection has been addressed.

In Living Waters, *Critical Supporting Watersheds* highlight the immediate portion of the watershed that sustains, or possibly degrades, each freshwater Core Habitat. These areas were also identified using a GIS model. Critical Supporting Watersheds represent developed and undeveloped lands, and can be quite large. Critical Supporting Watersheds can be helpful in land-use planning, and while they are not shown on these maps, they can be viewed in the Living Waters report or downloaded from www.mass.gov/mgis.

Understanding Core Habitat Species, Community, and Habitat Lists

What's in the List?

Included in this report is a list of the species, natural communities, and/or aquatic habitats for each Core Habitat in your city or town. The lists are organized by Core Habitat number.

For the larger Core Habitats that span more than one town, the species and community lists refer to the entire Core Habitat, not just the portion that falls within your city or town. For a list of all the state-listed rare species within your city or town's boundary, whether or not they are in Core Habitat, please see the town rare species lists available at www.nhesp.org.

The list of species and communities within a Core Habitat contains only the species and

Table 1. The number of rare species and types of natural communities explicitly included in the BioMap and Living Waters conservation plans, relative to the total number of native species statewide.

BioMap		
Biodiversity Group	Species and Verified Natural Community Types	
	Included in BioMap	Total Statewide
Vascular Plants	246	1,538
Birds	21	221 breeding species
Reptiles	11	25
Amphibians	6	21
Mammals	4	85
Moths and Butterflies	52	An estimated 2,500 to 3,000
Damselflies and Dragonflies	25	An estimated 165
Beetles	10	An estimated 2,500 to 4,000
Natural Communities	92	> 105 community types
Living Waters		
Biodiversity Group	Species	
	Included in Living Waters	Total Statewide
Aquatic Vascular Plants	23	114
Fishes	11	57
Mussels	7	12
Aquatic Invertebrates	23	An estimated > 2500

natural communities that were explicitly included in a given BioMap or Living Waters Core Habitat. Other rare species or examples of other natural communities may fall within the Core Habitat, but for various reasons are not included in the list. For instance, there are a few rare species that are omitted from the list or summary because of their particular sensitivity to the threat of collection. Likewise, the content of many very small Core Habitats are not described in this report or list, often because they contain a single location of a rare plant



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species. Some Core Habitats were created for suites of common species, such as forest birds, which are particularly threatened by habitat fragmentation. In these cases, the individual common species are not listed.

What does 'Status' mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act, M.G.L. c.131A, and its implementing regulations, 321 CMR 10.00. Rare species are categorized as Endangered, Threatened, or of Special Concern according to the following:

- **Endangered** species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- **Threatened** species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- **Special Concern** species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition, the Natural Heritage & Endangered Species Program maintains an unofficial **watch list** of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated any laws or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural

Legal Protection of Biodiversity

BioMap and Living Waters present a powerful vision of what Massachusetts would look like with full protection of the land that supports most of our biodiversity. To create this vision, some populations of state-listed rare species were deemed more likely to survive over the long-term than others.

Regardless of their potential viability, all sites of state-listed species have full legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.37 and 10.59). The **Massachusetts Natural Heritage Atlas** shows **Priority Habitats**, which are used for regulation under the Massachusetts Endangered Species Act and Massachusetts Environmental Policy Act (M.G.L. c.30) and **Estimated Habitats**, which are used for regulation of rare wildlife habitat under the Wetlands Protection Act. For more information on rare species regulations, see the *Massachusetts Natural Heritage Atlas*, available from the Natural Heritage & Endangered Species Program in book and CD formats.

BioMap and Living Waters are conservation planning tools and do not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the combined BioMap and Living Waters vision is fully realized, we must continue to protect all populations of our state-listed species and their habitats through environmental regulation.

communities reflects the documented number and acreages of each community type in the state:

- **Critically Imperiled** communities typically have 5 or fewer documented sites or have very few remaining acres in the state.
- **Imperiled** communities typically have 6-20 sites or few remaining acres in the state.
- **Vulnerable** communities typically have 21-100 sites or limited acreage across the state.
- **Secure** communities typically have over 100 sites or abundant acreage across the state; however excellent examples are identified as Core Habitat to ensure continued protection.



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Understanding Core Habitat Summaries

Following the BioMap and Living Waters Core Habitat species and community lists, there is a descriptive summary of each Core Habitat that occurs in your city or town. This summary highlights some of the outstanding characteristics of each Core Habitat, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific *fact sheets* at www.nhesp.org.

Next Steps

BioMap and Living Waters were created in part to help cities and towns prioritize their land protection efforts. While there are many reasons to conserve land – drinking water protection, recreation, agriculture, aesthetics, and others – BioMap and Living Waters Core Habitats are especially helpful to municipalities seeking to protect the rare species, natural communities, and overall biodiversity within their boundaries. Please use this report and map along with the rare species and community fact sheets to appreciate and understand the biological treasures in your city or town.

Protecting Larger Core Habitats

Core Habitats vary considerably in size. For example, the average BioMap Core Habitat is 800 acres, but Core Habitats can range from less than 10 acres to greater than 100,000 acres. These larger areas reflect the amount of land needed by some animal species for breeding, feeding, nesting, overwintering, and long-term survival. Protecting areas of this size can be

very challenging, and requires developing partnerships with neighboring towns.

Prioritizing the protection of certain areas within larger Core Habitats can be accomplished through further consultation with Natural Heritage Program biologists, and through additional field research to identify the most important areas of the Core Habitat.

Additional Information

If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program:

by Phone 508-792-7270, Ext. 200

by Fax: 508-792-7821

by Email: natural.heritage@state.ma.us.

by Mail: North Drive
Westborough, MA 01581

The GIS datalayers of BioMap and Living Waters Core Habitats are available for download from MassGIS: www.mass.gov/mgis

Check out www.nhesp.org for information on:

- Rare species in your town
- Rare species fact sheets
- BioMap and Living Waters projects
- Natural Heritage publications, including:
 - * Field guides
 - * Natural Heritage Atlas, and more!



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BioMap: Species and Natural Communities

Kingston

Core Habitat BM1120

Natural Communities

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Estuarine Intertidal: Brackish Tidal Marsh		Critically Imperiled
Estuarine Intertidal: Salt Marsh		Vulnerable

Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Arctic Tern	<i>Sterna paradisaea</i>	Special Concern
Bird Migration Habitat		-----
Coastal Waterbird Habitat		-----
Common Tern	<i>Sterna hirundo</i>	Special Concern
Least Tern	<i>Sterna antillarum</i>	Special Concern
Piping Plover	<i>Charadrius melodus</i>	Threatened
Roseate Tern	<i>Sterna dougallii</i>	Endangered
Spotted Turtle	<i>Clemmys guttata</i>	Special Concern

Core Habitat BM1164

Natural Communities

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Acidic Graminoid Fen		Vulnerable

Core Habitat BM1171

Natural Communities

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Acidic Graminoid Fen		Vulnerable
Atlantic White Cedar Bog		Imperiled
Level Bog		Vulnerable



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BioMap: Species and Natural Communities

Kingston

Core Habitat BM1178

Natural Communities

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Coastal Plain Pondshore		Imperiled

Plants

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
New England Boneset	<i>Eupatorium leucolepis var novae-angliae</i>	Endangered
Plymouth Gentian	<i>Sabatia kennedyana</i>	Special Concern
Reticulate Nut-Sedge	<i>Scleria reticularis</i>	Watch Listed

Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Attenuated Bluett	<i>Enallagma daeckii</i>	Special Concern
Comet Darner	<i>Anax longipes</i>	Special Concern
New England Bluett	<i>Enallagma laterale</i>	Special Concern
Pine Barrens Bluett	<i>Enallagma recurvatum</i>	Threatened
Water-Willow Stem Borer	<i>Papaipema sulphurata</i>	Threatened

Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Blanding's Turtle	<i>Emydoidea blandingii</i>	Threatened
Eastern Box Turtle	<i>Terrapene carolina</i>	Special Concern
Spotted Turtle	<i>Clemmys guttata</i>	Special Concern

Core Habitat BM1192

Natural Communities

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Coastal Atlantic White Cedar Swamp		Imperiled



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BioMap: Species and Natural Communities

Kingston

Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Hessel's Hairstreak	<i>Callophrys hesseli</i>	Special Concern

Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Northern Red-bellied Cooter	<i>Pseudemys rubriventris</i>	Endangered
Spotted Turtle	<i>Clemmys guttata</i>	Special Concern



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BioMap: Core Habitat Summaries

Kingston

Core Habitat BM1120

This Core Habitat contains a large Salt Marsh surrounded by many high-quality natural communities, including barrier beaches and mud flats. The sandy Plymouth and Duxbury Beaches are among the state's most important breeding sites for Piping Plovers, and both sites also support nesting Least Terns. These areas provide habitat to other nesting coastal waterbirds, as well as some of the most important migration stopover habitat in New England for a variety of different shorebirds.

Natural Communities

This is one of a series of Core Habitats that contain the largest acreage of Estuarine Intertidal Salt Marsh between Boston and Cape Cod. The Salt Marsh community type is a graminoid-dominated, tidally flooded coastal community with several vegetative zones. Salt Marshes form in areas subject to oceanic tides, but sheltered from wave energy. Here the sheer size of the natural community assures an abundance of microhabitats and mix of conditions that are important for plants and animals alike. This Salt Marsh is surrounded by many other high-quality natural communities including barrier beaches and mud flats. This Core Habitat also contains a moderately-sized, seepage-influenced variant of the Estuarine Intertidal Brackish Tidal Marsh. The Brackish Tidal Marsh community is often found in the brackish stretches of coastal rivers, and consists of mixed herbaceous vegetation that is flooded by daily tides. The community is structurally diverse, including high marsh and low marsh.

Vertebrates

The sandy beaches of Plymouth Beach and Duxbury Beach are among the state's most important breeding sites for Piping Plovers, and both sites also support nesting Least Terns. Plymouth Beach was formerly one of the most important Common Tern colonies in the state, and Roseate Terns, Arctic Terns, Least Terns, Laughing Gulls, Herring Gulls, Great Black-backed Gulls, and occasionally Black Skimmers have also nested here. In 1999, the colony was disrupted by foxes, and now persists in a much reduced state. Once predator removal is accomplished at this site, it may regain its former importance. Clarks Island, until the late 1980s, was one of the most important heronries in Massachusetts. It supported a diverse breeding colony of Double-crested Cormorants, Black-crowned Night-Herons, Glossy Ibises, Little Blue Herons, Snowy Egrets, Great Egrets, Herring Gulls, and Great Black-backed Gulls. Destruction of nesting trees and shrubs led to the demise of the heronry. Clarks Island may support breeding herons and egrets in the future. Protecting of this site as conservation land is recommended. Potential threats to nesting coastal waterbirds include: habitat alteration and loss, human disturbance (including off-road vehicle use and dogs), and predation. Annual protection from these threats is needed.

This complex of habitats also provides some of the most important migration stopover habitat in New England for a variety of shorebirds that nest in arctic and subarctic regions of North America. Broad expanses of intertidal sand flats that are exposed at low tide in Plymouth Bay, Plymouth Harbor, and Duxbury Bay provide excellent feeding habitat for large flocks of migrating shorebirds, especially from mid-July through October. At high tide, when intertidal feeding habitats are unavailable, large numbers of migrating shorebirds rest on undisturbed portions of Plymouth Long Beach and Duxbury Beach. An annual conservation need is the protection of migrating shorebirds and their resting and feeding habitats from disturbance caused by pedestrian beach-goers, dogs, and off-road vehicles.



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BioMap: Core Habitat Summaries

Kingston

Core Habitat BM1164

Natural Communities

This Core Habitat contains a moderately-sized Acidic Graminoid Fen of good quality. Acidic Graminoid Fens are sedge and Sphagnum-dominated acidic peatlands that experience some groundwater and/or surface water flow but no calcareous seepage. Standing water is often present throughout much of the growing season.

Core Habitat BM1171

Natural Communities

This Core Habitat contains a complex of small, yet high-quality, acidic peatland communities including a good example of the uncommon Atlantic White Cedar Bog. This community type is characterized by a nearly continuous Heath shrub layer and an open canopy dominated by Atlantic White Cedar. Atlantic White Cedar Bogs occur in kettlehole depressions overlain with waterlogged peat soils and Sphagnum moss.

Core Habitat BM1178

This Core Habitat is one of the best biodiversity conservation opportunities remaining along the South Shore due to its large size, minimal fragmentation, and proximity to similar habitat in Myles Standish State Forest. The area supports the globally rare Pine Barrens Bluet damselfly and the Water-willow Stem Borer moth, as well as important populations of two globally rare plant species. The diverse landscape provides significant habitat for the Eastern Box Turtle and other rare reptiles and amphibians. Apart from the Kingston State Forest, this Core Habitat appears to be completely unprotected, and portions of it are currently being developed.

Natural Communities

In Kingston, this Core Habitat contains a high-quality Coastal Plain Pondshore community. Coastal Plain Pondshores are globally rare herbaceous communities of exposed pondshores with a distinct Coastal Plain flora. Water levels change with the water table, typically leaving an exposed shoreline in late summer where many rare species grow. While the community here is within the zone of groundwater contribution of two public water supply wells, the pondshore community is large, in close proximity to four other Coastal Plain Pondshores, unaffected by cranberry operations, and well-buffered within the surrounding Mixed Oak-Pine Forest.

Plants

This Core Habitat is very significant for two rare plant species. It contains one of the state's largest populations of the Endangered and globally rare New England Boneset, a species which is only found in Massachusetts, Rhode Island, and New York. Several populations of another globally rare species, Plymouth Gentian, are found scattered across this Core Habitat.



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BioMap: Core Habitat Summaries

Kingston

Invertebrates

This Core Habitat includes Coastal Plain ponds such as Indian Pond, Muddy Pond, Smelt Pond, Pratt Pond, Goose Pond, Ricketts Pond, and a number of smaller ponds, all of which are important habitat for rare dragonflies such as the Comet Darner and rare damselflies such as the Pine Barrens Bluet. The Pine Barrens Bluet is endemic to the Coastal Plain of the Northeast and is only found in southeastern Massachusetts and in the pine barrens of New Jersey. The Coastal Plain pondshores and other wetlands within this Core Habitat are also habitat for the Water-willow Stem Borer moth, a Threatened species that is found nowhere in the world outside of Massachusetts.

Vertebrates

This Core Habitat includes upland forest, small scattered wetlands, small ponds, and a relatively high density of Certified Vernal Pools. The area encompasses significant habitat for Eastern Box Turtles. The wetlands and associated vernal pools provide habitat for other rare reptiles and amphibians, such as Spotted Turtles, Blanding's Turtles, and probably for Four-toed Salamanders and Blue-spotted Salamanders as well. This Core Habitat also contains forest bird habitat and migration habitat near the coast for terrestrial birds. Much of this area is unprotected, and the habitat here has been eroded by recent development along the western, northern, and eastern sides.

Core Habitat BM1192

This Core Habitat in Carver, Kingston, and Plymouth encompasses interconnected wetlands that support Spotted Turtles and Northern Red-bellied Cooter turtles. It also contains a sizeable Coastal Atlantic White Cedar Swamp that provides habitat for the rare Hessel's Hairstreak butterfly.

Natural Communities

This Core Habitat contains a moderate-sized Coastal Atlantic White Cedar Swamp, mostly in Carver, with an arm extending into Kingston. Coastal Atlantic White Cedar Swamps are acidic, low nutrient basin swamps dominated by Atlantic White Cedar in the overstory and a mixture of species in the understory. This community type typically occurs in basins on the Atlantic Coastal Plain. It provides excellent winter habitat for deer, breeding habitat for amphibians, as well as habitat for invertebrates.

Invertebrates

This Core Habitat includes an Atlantic White Cedar Swamp in the northeast corner of Carver that provides unfragmented habitat for Hessel's Hairstreak butterfly, which has been known to inhabit this swamp for over 35 years. This Core Habitat is located less than 5 km from Core Habitat to the south, also habitat for Hessel's Hairstreak, which may allow for occasional dispersal of butterflies between these two sites. The cedar swamp habitat here appears to be currently unprotected.



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BioMap: Core Habitat Summaries

Kingston

Vertebrates

This is an elongate Core Habitat encompassing connected wetlands, ponds, and cranberry bogs that support populations of Northern Red-bellied Cooter turtles (formerly known as Plymouth Red-bellied Turtles) and Spotted Turtles. The relatively narrow shape of this Core Habitat and its proximity to several roads means that turtles here may be vulnerable to road mortality.



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Living Waters: Species and Habitats

Kingston

Core Habitat LW144

Exemplary Habitats

Common Name

Scientific Name

Status

Fish Habitat

Core Habitat LW222

Invertebrates

Common Name

Scientific Name

Status

Eastern Pondmussel

Ligumia nasuta

Special Concern

Tidewater Mucket

Leptodea ochracea

Special Concern

Core Habitat LW350

Exemplary Habitats

Common Name

Scientific Name

Status

Lake/Pond Habitat



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Living Waters: Core Habitat Summaries

Kingston

Core Habitat LW144

The Jones River is one of two rivers in the state known for its large runs of Rainbow Smelt, a fish that migrates from coastal waters to spawn (breed) in freshwater. This stretch of the river provides the fast-flowing, rocky habitats this fish requires for spawning. Once historically abundant, Rainbow Smelt has declined due to dams obstructing its passage, and excess sediment runoff degrading its spawning habitats. This river is also used by migrating Blueback Herring and Alewife, two other sea-running fish species.

Core Habitat LW222

Silver Lake has supported a diverse and robust group of freshwater mussels. Five of the state's twelve mussel species are known to occur here, including the rare Tidewater Mucket and Eastern Pondmussel. The population of the Eastern Pondmussel in particular, was found to be robust and showing evidence of successful reproduction. Unfortunately, Silver Lake recently suffered a massive mussel die-off that was attributed to low water levels from drought conditions and water withdrawals. More studies are needed to assess the current status of these important mussel populations.

Core Habitat LW350

Ponds on the Atlantic Coastal Plain experience natural water level fluctuations and provide uncommon freshwater habitats for aquatic plants and insects with their acidic waters and sandy, cobble, or mucky pond bottoms. Muddy Pond is one of the few such ponds that has little or no development in its riparian areas and is removed from cranberry agriculture. Muddy Pond and its associated peripheral ponds provide important rare species habitats that may be threatened by water level drawdowns due to wells in the region.



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For more information on rare species and natural communities, please see our fact sheets online at www.nhesp.org

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To learn more about the Natural Heritage & Endangered Species Program and the Commonwealth's rare species, visit our web site at: www.nhesp.org.